

REMARKS

Claims 1, 15-18, 20-21, 24-25, 27 and 28 have been amended. No new matter has been added. Support for the claim amendments may be found throughout the specification, for example at, p. 9, lines 20-21, p. 50, lines 14-15 and Example 5. New claims 39-43 have been added. No new matter has been added. Support for the new claims may be found throughout the specification, for example at, Example 5. Claim 26 has been cancelled without prejudice. Applicants reserve the right to pursue the cancelled subject matter of claim 26 in a continuing application.

Applicants thank the Examiner for withdrawing the previous claim rejection under 35 U.S.C. § 102.

Claims 1-3, 6-12, 14-21, 23-25, 27-28, 30-32, 37 and 39-43 are pending.

INTERVIEW SUMMARY

Applicants thank Examiner Gwartney for the interview conducted with Applicants' representative on November 10, 2010 during which the Applicants discussed proposed claim amendments and response to the pending Office Action.

CLAIM REJECTIONS

Rejection of claims under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 20-21 and 26 under 35 U.S.C. § 112, second paragraph, as being indefinite. See Office Action a p. 2.

Claim 20

Specifically, the Examiner states that the phrases "capable of being achieved" and "optimizing" in claim 20 "render the claim indefinite because it is not clear how the whey release is optimized." *Id.* Not in acquiescence to the rejection but in an effort to expedite prosecution, claim 20 has been amended to clarify that the target moisture in the low fat cheese is achieved by retarding the whey release process. Support for this claim amendment may be found in the specification, for example at, p. 9, lines 20-21. Accordingly, claim 20 as a whole would apprise one of ordinary skill in the art of its scope. Applicants respectfully request reconsideration and the withdrawal of this rejection.

Claim 21

The Examiner contends that the phrase “wherein said EPS increases the stability” renders claim 21 indefinite “because it is not clear what is encompassed by the term ‘stability’, i.e. color stability, microbial stability.” Id. Not in acquiescence to the rejection but in an effort to expedite prosecution, claim 21 has been amended to delete the term “stability” from the claim.

Accordingly, claim 21 is not indefinite and the claim as a whole would apprise one of ordinary skill in the art of its scope. Applicants respectfully request reconsideration and the withdrawal of this rejection.

Claim 26

Not in acquiescence to the rejection but in an effort to expedite prosecution, claim 26 has been cancelled thus rendering this rejection moot. Applicants respectfully request the withdrawal of this rejection.

Rejection of claims under 35 U.S.C. § 103

Perry

The Examiner has rejected claims 1-3, 6-12, 16-28 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Perry. See Office Action at p. 3. Claims 2-3, 6-12, 16-28 and 30 depend from independent claim 1.

The Examiner contends that “[g]iven Perry et al. disclose lactic acid bacterium, *Streptococcus thermophilus MR-1C* and *Lactobacillus delbrueckii MR-1R* that are capable of producing an exopolysaccharide (EPS) (Abstract, p. 799/Introduction/paragraph 3), it is clear that they intrinsically are capable of producing an enzyme that is capable of producing EPS and fermenting lactic acid.” See Office Action at p. 4. Additionally, the Examiner states that “given Perry et al. disclose *Streptococcus thermophilus*, since *Streptococcus thermophilus* strains are known to produce EPS (Abstract, p. 799/Introduction/paragraph 3), it follows that the *Streptococcus thermophilus MR-1C* disclosed by Perry et al. and *Streptococcus thermophilus V3* could be used interchangeably.” Id.

As acknowledged by the Examiner, Perry describes *Streptococcus thermophilus MR-1C* and *Lactobacillus delbrueckii MR-1R* strains on p. 800. See Office Action at p. 4. The Examiner further acknowledges that Perry “does not explicitly disclose the V3 strain” or the

“322 strain.” See Office Action at p. 5. Perry discloses the manufacture of low fat mozzarella cheese using (i) *Streptococcus thermophilus* strain TA061 and *Lactobacillus helveticus* LH100 or (ii) *Streptococcus thermophilus* strain MR-1C and *Lactobacillus delbrueckii* spp *bulgaricus* MR-1R. See Abstract of Perry. Perry further discloses that a low fat mozzarella cheese can be manufactured that has a higher cheese moisture retention and higher meltability than corresponding cheeses made using non-EPS starter cultures. *Id.* **Nowhere** in Perry is the *Streptococcus thermophilus* strain V3 taught or suggested.

Perry does not teach or suggest the specific strains described in claim 1, i.e. Perry does not teach or suggest a composition suitable for forming a low fat cheese, the composition including a starter acidification culture and an exopolysaccharide (EPS) fermentation culture wherein the EPS culture contains a viable lactic acid microorganism selected from the group that includes *Streptococcus thermophilus* V3, *Lactococcus lactis* ssp *cremoris* 322, *Lactobacillus sakei* 570, and *Leuconostoc mesenteroides* 808, wherein the lactic acid microorganism is capable of producing an enzyme, and wherein the enzyme is capable of producing an EPS.

With respect to the Examiner’s argument that a simple substitution of *Streptococcus thermophilus* MR-1C disclosed by Perry et al. can be achieved with *Streptococcus thermophilus* V3, MPEP 2143(B) states that “[t]he rationale to support a conclusion that the claim would have been obvious is that the substitution of one known element for another yields predictable results to one of ordinary skill in the art.” Applicants have explained that each of the specific strains recited in the claims can **change** the rate of acidification by the starter culture as described on p. 64, lines 24 to 26; p. 65, lines 26 to 29; p. 66, line 29 to p. 67, line 2; p. 68, lines 4 to 6; and in Tables 2 to 5 of the specification. Thus, the selection of the particular strains described in amended claim 1 gives rise to a surprising technical effect not taught or suggested in Perry. The ability to control the rate of acidification by the starter culture is advantageous in cheese making because it allows greater control over the cheese making process and the properties of the resulting cheese.

For example, advantageously the strains according to the present invention can be used to produce **low fat** cheeses – such as Danbo - which are not as **rubbery** and not as **insoluble** (i.e. crumbly) as **low fat** cheeses produced **without** the strains according to the present invention (see, for instance, Example 5). Moreover, the **low fat** Danbo cheese of Example 5

advantageously has a **similar texture** compared to Danbo 30+ cheese which has **high fat** content.

Perry does not teach or suggest that the strains used in Perry can change the rate of acidification by the starter culture. There is no suggestion in Perry that it would be advantageous to select a strain that is able to change the rate of acidification by the starter culture. The skilled person reading Perry would therefore not be motivated to look for a strain that has this feature or to substitute the strain taught in Perry with the strains specified in the amended claim 1. There is no motivation for the skilled person to select microorganisms from the group that includes:

- (1) *Streptococcus thermophilus*,
- (2) *Lactococcus lactis* ssp *cremoris*,
- (3) *Lactobacillus sakei*, and
- (4) *Leuconostoc mesenteroides*,

out of the plethora of lactic acid microorganisms known in the art. Moreover, there is no motivation for the skilled person to select the specific strains

- (i) *Streptococcus thermophilus V3*,
- (ii) *Lactococcus lactis* ssp *cremoris 322*,
- (iii) *Lactobacillus sakei 570*, and
- (iv) *Leuconostoc mesenteroides 808*,

out of:

- (a) the plethora of *Streptococcus thermophilus* strains known in the art;
- (b) the plethora of *Lactococcus lactis* ssp *cremoris* strains known in the art;
- (c) the plethora of *Lactobacillus sakei* strains known in the art; and
- (d) the plethora of *Leuconostoc mesenteroides* strains known in the art.

To assert otherwise would violate the basic considerations of obviousness as set forth in MPEP 2141 (“[t]he references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.”).

Since claims 2-3, 6-12, 16-28 and 30 depend from independent claim 1, those claims should be patentable over Perry for at least the reasons described above. Applicants respectfully request reconsideration and the withdrawal of this rejection.

Perry and Degeest

The Examiner has rejected claims 14 and 32 under 35 U.S.C. § 103(a) as being unpatentable over Perry and Degeest et al., *Journal of Applied Microbiology*, Vol. 91, p. 470-477 (2001) (“Degeest”). See Office Action at p. 7. Claims 14 and 32 depend from independent claim 1.

As previously explained, Perry does not teach or suggest a composition suitable for forming a low fat cheese, the composition including a starter acidification culture and an exopolysaccharide (EPS) fermentation culture wherein the EPS culture contains a viable lactic acid microorganism selected from the group that includes *Streptococcus thermophilus* V3, *Lactococcus lactis* ssp *cremoris* 322, *Lactobacillus sakei* 570, and *Leuconostoc mesenteroides* 808, wherein the lactic acid microorganism is capable of producing an enzyme, and wherein the enzyme is capable of producing an EPS.

This defect is not remedied by Degeest. Degeest discloses optimizing the production of EPS by *Lactobacillus sakei* 0-1 in order to obtain high amounts of EPS by studying the influence of temperature and carbon source on EPS production. See Abstract. Like the Perry reference, Degeest does not disclose a composition comprising any of the specific bacterial strains recited in claim 1, let alone that the use of the specific strains recited in claim 1 can advantageously change the rate of acidification by the starter culture. **Nowhere** in Degeest *et al* is the *Lactobacillus sakei* strain 570 taught or suggested.

Therefore, Degeest does not teach or suggest a composition suitable for forming a low fat cheese, the composition including a starter acidification culture and an exopolysaccharide (EPS) fermentation culture wherein the EPS culture contains a viable lactic acid microorganism selected from the group that includes *Streptococcus thermophilus* V3, *Lactococcus lactis* ssp *cremoris* 322, *Lactobacillus sakei* 570, and *Leuconostoc mesenteroides* 808, wherein the lactic acid microorganism is capable of producing an enzyme, and wherein the enzyme is capable of producing an EPS.

As discussed above, the present invention shows that advantageously *Lactobacillus sakei* strain 570 not only produces EPS but it can **change** the rate of acidification by the starter culture (page 64, lines 24-26 and Table 2). The ability to control the rate of acidification by the starter culture is advantageous in low fat cheese making because it allows greater control over the

cheese making process and the properties of the resulting low fat cheese.

There is no motivation in Perry for the skilled person to use a lactic acid bacterial strain which is not mentioned in Perry - let alone use *Lactobacillus sakei* over and above any other lactic acid strain. Moreover, there is no motivation in Perry *et al* for the skilled person to use the specific *Lactobacillus sakei* strain 570 over and above any other strain of *Lactobacillus sakei*. To assert otherwise is to use impermissible hindsight analysis. In addition, there is no motivation in Degeest for the skilled person to use other strains of *Lactobacillus sakei* over and above strain 0-1 - let alone to use the specific *Lactobacillus sakei* strain 570. To assert otherwise is to use impermissible hindsight analysis.

Accordingly, since claims 14 and 32 are dependent on claim 1, claims 14 and 32 are patentable over the combination of Perry and Degeest for at least the reasons described above. Applicants respectfully request reconsideration and the withdrawal of this rejection.

Perry and Tallgren

The Examiner has rejected claims 15 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Perry and Tallgren et al., *Applied and Environmental Microbiology*, Vol. 65, No. 2, p. 862-864 (1999) ("Tallgren"). See Office Action at p. 8. Claims 15 and 31 depend from independent claim 1.

As previously explained, Perry does not teach or suggest a composition suitable for forming a low fat cheese, the composition including a starter acidification culture and an exopolysaccharide (EPS) fermentation culture wherein the EPS culture contains a viable lactic acid microorganism selected from the group consisting of *Streptococcus thermophilus* V3, *Lactococcus lactis* ssp *cremoris* 322, *Lactobacillus sakei* 570, and *Leuconostoc mesenteroides* 808, wherein the lactic acid microorganism is capable of producing an enzyme, and wherein the enzyme is capable of producing an EPS.

This defect is not remedied by Tallgren. Tallgren reports the results of screening soil microbes associated with sugar beet spoilage and slime production in the most Northern sugar beet fields in the world (Finland). See p. 862 of Tallgren. Tallgren discloses the isolation of EPS-producing microorganisms from sugar-beet. *Id.* Two of the strains were identified as *Leuconostoc mesenteroides* See Abstract.

Like the Perry reference, Tallgren does not disclose a composition comprising any of the specific bacterial strains recited in claim 1, let alone that the use of the specific strains recited in claim 1 can advantageously change the rate of acidification by the starter culture.

On page 8 of the Office Action, fourth paragraph, the Examiner acknowledges that Perry “does not disclose *Leuconostoc mesenteroides* or a bacterium which produces a homo-EPS.” Furthermore, on page 9 of the Office Action, second paragraph, the Examiner acknowledges that Tallgren “does not explicitly disclose [*Leuconostoc mesenteroides*] 808.” Nowhere in Tallgren *et al* is the *Leuconostoc mesenteroides* 808 taught or suggested.

Therefore, Tallgren does not teach or suggest a composition suitable for forming a low fat cheese, the composition including a starter acidification culture and an exopolysaccharide (EPS) fermentation culture wherein the EPS culture contains a viable lactic acid microorganism selected from the group consisting of *Streptococcus thermophilus* V3, *Lactococcus lactis* ssp *cremoris* 322, *Lactobacillus sakei* 570, and *Leuconostoc mesenteroides* 808, wherein the lactic acid microorganism is capable of producing an enzyme, and wherein the enzyme is capable of producing an EPS.

Further, as discussed above, the present invention shows that advantageously *Leuconostoc mesenteroides* 808 not only produces EPS but it can **change** the rate of acidification by the starter culture (page 64, lines 24-26 and Table 2). The ability to control the rate of acidification by the starter culture is advantageous in low fat cheese making because it allows greater control over the cheese making process and the properties of the resulting low fat cheese.

There is no motivation in Perry for the skilled person to use a lactic acid bacterial strain which is not mentioned in Perry - let alone use *Leuconostoc mesenteroides* over and above any other lactic acid strain. Moreover, there is no motivation in Perry for the skilled person to use the specific *Leuconostoc mesenteroides* strain 808 over and above any other strain of *Leuconostoc mesenteroides*. To assert otherwise is to use impermissible hindsight analysis. In addition, there is no motivation in Tallgren for the skilled person to isolate other strains of *Leuconostoc mesenteroides* - let alone to isolate the specific *Leuconostoc mesenteroides* strain 808. To assert otherwise is to use impermissible hindsight analysis.

Accordingly, since claims 15 and 31 are dependent on claim 1, claims 15 and 31 are

patentable over the combination of Perry and Tallgren for at least the reasons described above. Applicants respectfully request reconsideration and the withdrawal of this rejection.

Degeest

The Examiner has rejected claim 37 under 35 U.S.C. § 103(a) as being unpatentable over Degeest. See Office Action at p. 9.

Claim 37 recites a culture of *Lactobacillus sakei* strain 570 deposited as DSM 15889 at the Deutsche Sammlung von Mikroorganismen und Zellkulturen GnbH. The Examiner however, states that “[g]iven Degeest et al. disclose a *Lactobacillus sakei* culture, since *Lactobacillus sakei* strains are known to produce EPS ..., it follows that the *Lactobacillus sakei* 0-1 and *Lactobacillus sakei* DSM 15889 are interchangeable.” See Office Action at p. 9. Applicants respectfully traverse this statement.

Degeest discloses optimizing the production of EPS by *Lactobacillus sakei* 0-1 in order to obtain high amounts of EPS by studying the influence of temperature and carbon source on EPS production. See Abstract. **Nowhere** in Degeest et al is the *Lactobacillus sakei* strain 570 taught or suggested. Degeest does not teach or suggest a culture of *Lactobacillus sakei* strain 570 deposited as DSM 15889 at the Deutsche Sammlung von Mikroorganismen und Zellkulturen GnbH. Moreover, there is no motivation in Degeest for the skilled person to identify other strains of *Lactobacillus sakei* over and above strain 0-1 – let alone identify the specific strain 570. To assert otherwise is to use impermissible hindsight analysis.

Accordingly, claim 37 is patentable over Degeest. Applicants respectfully request reconsideration and the withdrawal of this rejection.

Patentability of new claims 39-43

New claims 39-43 depend from independent claim 1. Since independent claim 1 is patentable over the above-cited references, alone or in combination, dependent claims 39-43 are patentable for at least the reasons described above. Applicants respectfully request the allowability of new claims 39-43.

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CONCLUSION

For the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the pending rejections. A petition for an extension of time is attached.

Applicants believe that the claims now pending are in condition for allowance. Should any fees be required by the present Amendment, the Commissioner is hereby authorized to charge Deposit Account **19-4293**.

Respectfully submitted,

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